



User Manual

XMR Module

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Preface

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Version	Date	Comment	By
1.0	2006.02.03	Draft Release	S. Ackerman
1.1	2006.02.09	Initial Release	S. Ackerman
1.2d	2007.01.17		S. Ackerman
1.3			
1.4			
1.5			

References:
XMR_UM.doc

Overview

Filters and Algorithms

PixelMotion™ De-interlacing

PixelMotion de-interlacing of video originated material produces perfect progressive frames in preparation for further processing. The processing aperture is adjusted on a pixel-by-pixel basis, which preserves all of the detail of the original interlaced image and eliminates jaggies in the output image.

Scene Change Detection

Preserves clean cuts between scenes. Upon detecting a cut, the temporal aperture is reduced from 4-fields to 2-fields for the first frame in the new scene. This prevents uncorrelated data from being used in the interpolation process at scene boundaries.

3:2 Handling

Recognizes and handles the redundant fields inserted by the telecine during 24fps film to 30fps video conversion. By detecting 3:2 sequences it allows for better performance in the de-interlace process by maintaining the full vertical resolution.

Aspect Ratio Control

Allows selection from standard aspect ratios such as common top & bottom, common sides and anamorphic.

Detail Enhancement

Is an edge-sharpening filter based on a traditional film compositing technique called "Unsharp Masking." This filter corrects any blurring introduced during image capture, compression or resampling.

Noise Reduction

Adjustable noise reduction controls offer a greater degree of temporal recursive noise reduction with fewer artifacts. For greater control, the filter operates in both automatic and manual modes. In auto mode, the system analyzes the input and applies the noise reduction setting based on the detected noise and degree of motion in the image. A bias control allows the auto mode aggressiveness to be fine-tuned. In manual mode, users have controls to adjust the recursion for both static and motion areas of the image plus a threshold setting controls the sensitivity of the noise reduction to motion vs. noise.

For noise reduction the pixels identified as being in motion are shown with a red overlay.

Formats

The XMR Module supports the following formats

XMR-UPC-4F > Up-conversion, high quality mode

Input	Output	Input	Output
480i59.94	720p59.94	576i50	720p50
480i59.94	1080i59.94	576i50	1080i50

XMR-UNC > Up-conversion with Noise Reduction

Input	Output	Input	Output
480i59.94	720p59.94	576i50	720p50
480i59.94	1080i59.94	576i50	1080i50

XMR-DNC-4F > Down-conversion, high quality mode

Input	Output	Input	Output
720p59.94	480i59.94	720p50	576i50
1080i59.94	480i59.94	1080i50	576i50

XMR-UDCS > Up/Down/Cross-conversion

Input	Output	Input	Output
480i59.94	720p59.94	576i50	720p50
480i59.94	1080i59.94	576i50	1080i50
720p59.94	480i59.94	720p50	576i50
720p59.94	1080i59.94	720p50	1080i59.94
1080i59.94	480i59.94	1080i50	576i50
1080i59.94	720p59.94	1080i50	720p50

XMR-UDCSN > Up/Down/Cross-conversion with Noise Reduction

Input	Output	Input	Output
480i59.94	720p59.94	576i50	720p50
480i59.94	1080i59.94	576i50	1080i50
720p59.94	480i59.94	720p50	576i50
720p59.94	1080i59.94	720p50	1080i59.94
1080i59.94	480i59.94	1080i50	576i50
1080i59.94	720p59.94	1080i50	720p50

Packages

The imageConvert families of applications are available in the following configurations

XMR-UPC-4F	XMR Module - High Quality Up-converter Includes: Up-conversion w/ PixelMotion De-interlacing, Aspect Ratio Conversion, Colorspace Conversion, and Detail Enhance. Includes: XMR Module and Rear Interface
XMR-UNC	XMR Module - High Quality Up-converter with Noise Reduction Includes: Up-conversion w/ PixelMotion De-interlacing, Noise Reduction, Aspect Ratio Conversion, Colorspace Conversion, and Detail Enhance. Includes: XMR Module and Rear Interface
XMR-DNC-4F	XMR Module - High Quality Down-converter Includes: Down-conversion, Aspect Ratio Conversion, Colorspace Conversion, and Detail Enhance. Includes: XMR Module and Rear Interface
XMR-UDCS	XMR Module - High Quality Up/Down/Cross-converter Includes: Up-conversion, Down-conversion, Cross-conversion, Aspect Ratio Conversion, Colorspace Conversion, and Detail Enhance. Includes: XMR Module and Rear Interface
XMR-UDCSN	XMR Module - High Quality Up/Down/Cross-converter with Noise Reduction Includes: Up-conversion, Down-conversion, Cross-conversion, Noise Reduction, Aspect Ratio Conversion, Colorspace Conversion, and Detail Enhance. Includes: XMR Module and Rear Interface

Installing & Starting

Getting assistance with the XMR

This manual will help you get started with your Teranex application. It provides an overview of features and procedures for the tasks you can perform using this product.

However, if you need further assistance please contact:

24-hr Technical Support Phone:

For US & Canada:	877.2.TERANEX (877.283.7263)
International:	1.407.858.6000

Technical Support e-mail: support@teranex.com

Technical Support web site: www.teranex.com/support

Servicing

Only authorized service personnel should open the unit. Disconnect AC sources to the power supply(ies) before servicing.

Quickstart Guide

1. Install the Teranex XMR modules in the frame. Install the XMR-I/O-1 Rear I/O Module first, then install the XMR-MOD-1 processor module. For more detailed instructions on slot usage and installation see the sections that follow.
2. Connect the frame to the network and navigate the web browser to the frame. See the 2000NET Instruction Manual for information on configuring your frame IP address and connecting to the network.
3. Navigate to the module you would like to configure and click on the appropriate slot to open configuration links.
4. Click on the **Slot Config** link on the left side of the page. This page allows you to assign a name to this module. Assigning easily recognized names will help later in the configuration process.
5. Connect signal cables. Configuration will be easier if all of the input signals are connected at this time.
6. Configure the Format and Reference pages. Configure the input and output formats and the reference source. If you have the 2000GEN reference installed in the frame and want to use an external reference signal, set the reference source to External. If not, set the reference source to Internal.
7. Configure the input and output formats and the reference source. If you have the 2000GEN reference installed in the frame and want the Kameleon to work as a frame sync.

To install the Teranex XMR modules:

1. Place the XMR-IO-1 rear module in a frame slot and tighten the screws on each side of the rear module,
2. Place the processor module in the corresponding front slot, and
3. Cable the signal ports.

Note: All Kameleon modules can be inserted and removed from a 2000 Series Kameleon Frame with power on.

Frame Capacity

Kameleon modules can be installed in any 2000 Series frame.

The one rackunit 2000T1DN frame can hold up to 2 Teranex XMR modules.

The three rackunit (3RU) 2000T3N frame can hold up to 6 Teranex XMR modules when the 2000FAN fan sled and two power sleds are installed.

Module Placement in the 2000T3N Kameleon Frame

There are twelve slot locations in both the front and rear of a 3 RU frame. The 3RU can accommodate up to 6 Teranex XMR Modules.

To install a Kameleon module set in the 2000 Series frame:

1. Locate a vacant slot in the rear of the 3 RU frame. Since the XMR-IO-1 rear module takes up two slot spaces, make sure that placement of the rear module will align with available spaces in the front of the frame. See Figure 1, which shows the slots and slot numbers for the chassis.

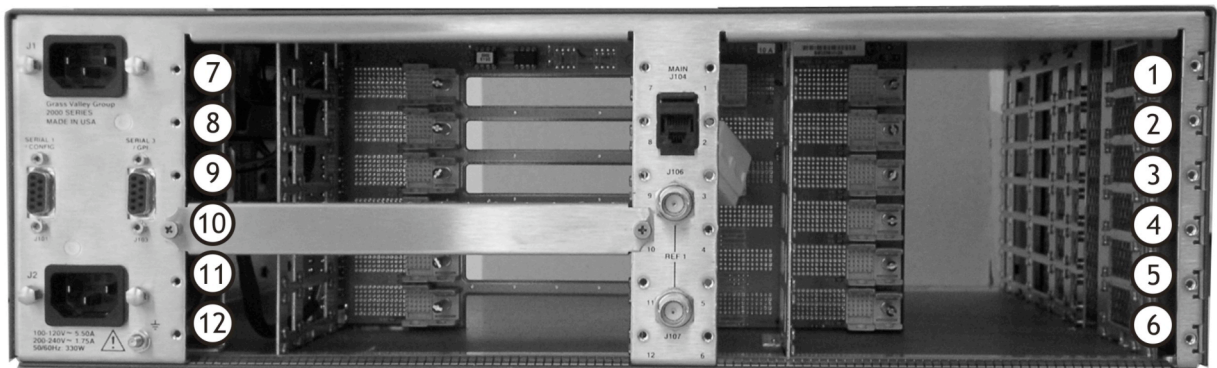


Figure 1 - 3RU Kameleon Chassis (with slot numbers)

2. Insert the XMR-IO-1 rear module into the vacant rear slot of the frame. Figure 2 shows the rear module being inserted into slot 4 of the 3RU Kameleon chassis.

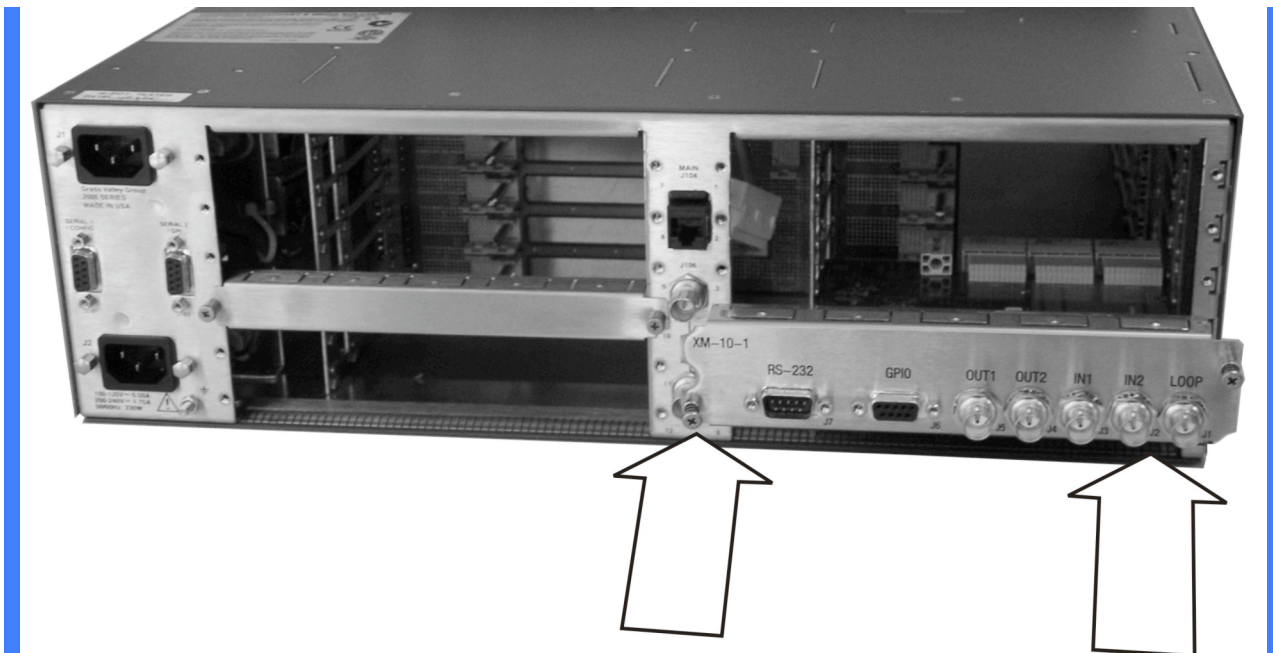


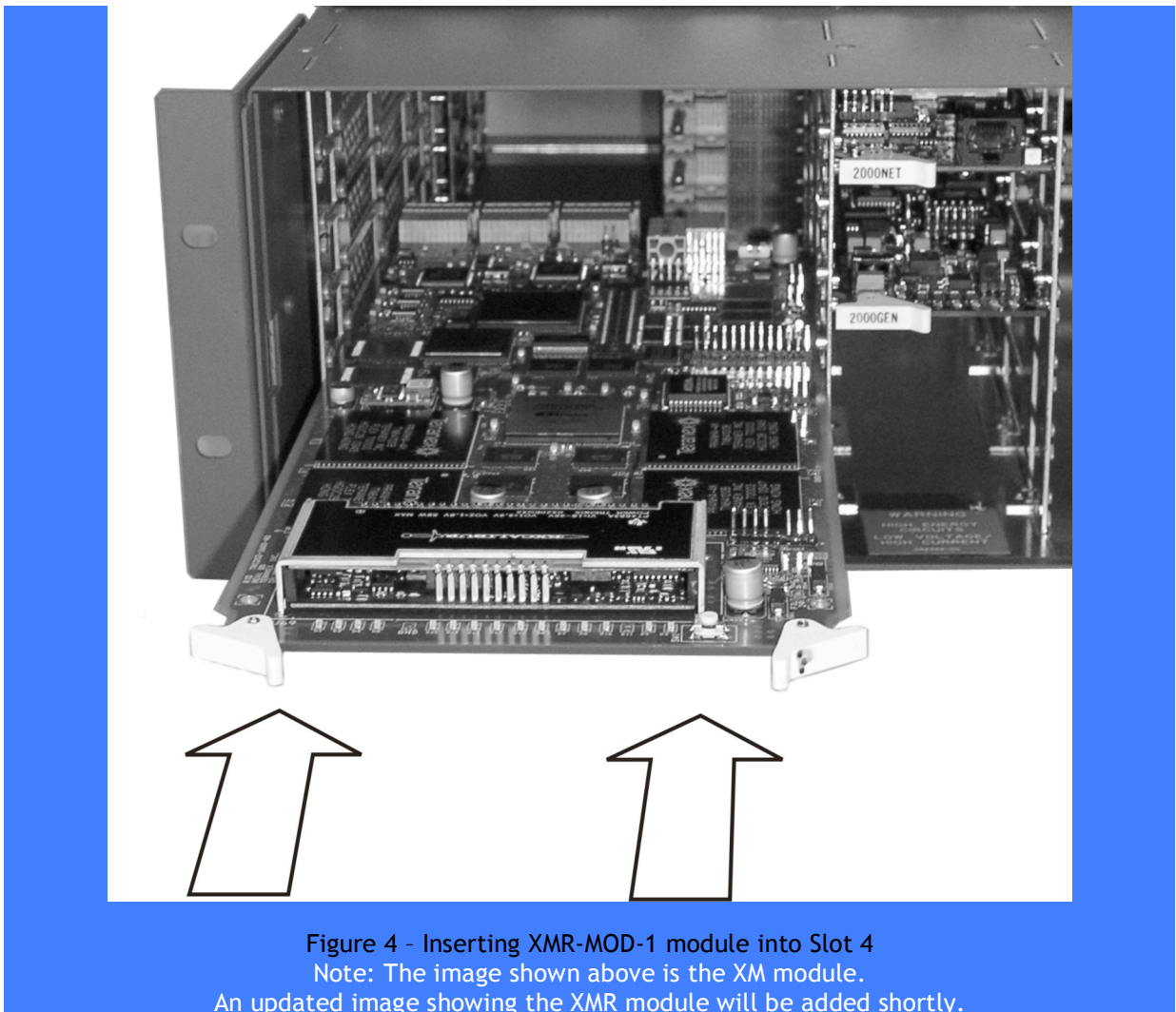
Figure 2 - Inserting XMR-IO-1 Rear Module into Slot 4
Note: The image shown above is the XM rear module.
An updated image showing the XMR rear module will be added shortly.

3. Verify that the module connector seats properly against the midplane.
4. Using a crossblade screwdriver, tighten the two screw locks to secure the module in the frame.
5. Locate the corresponding front slot (1 -12) in the frame. Since the Rear Module covers two slot spaces, the processor module will always want to be installed in the lower of the two slots covered by the Rear Module. The 3 RU frame front view is illustrated in Figure 3.



Figure 3 - 3RU Frame Slots and Slot Numbers

6. With the component side up, insert the processing module in the corresponding front slot (see Figure 4). Note that since the rear module uses up two slot spaces, the processing module will need to be inserted in the lower of these two slots to connect to the rear module correctly.



7. Verify that the module connector seats properly against the midplane and rear module connector.
8. Press firmly on both ejector tabs to seat the module.

Cabling

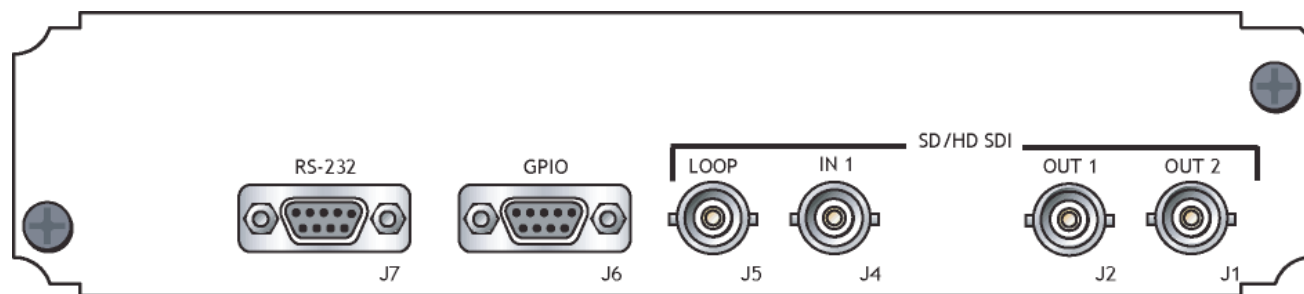


Figure 5 - XMR-IO-1 Rear I/O Module

RS-232 - Serial Port connection to the XMR module. This allows a direct interface to the module for doing limited testing and configuration. This port is not normally used.

GPIO - This port allows connection of external GPI signals to the XMR module.

Loop - Provide a loop out for the input

IN 1 - Serial Digital input connection. The connection may be either standard definition (SD) or high definition (HD).

Out1 - Serial Digital Output 1. The connection will be either standard definition (SD) or high definition (HD) depending on the output format selected.

Out2 - Serial Digital Output 2. The connection will be either standard definition (SD) or high definition (HD) depending on the output format selected.

Power Up

The front LED indicators (from left to right).

FAULT - Red diagnostic LED is off during normal operation

COMM - Yellow LED on during remote control communication

CONF - Yellow LED on when module is initializing or processing control data

PWR - Green diagnostic LED on indicates power OK

Inp Prsnt - Input Present - indicates the XMR is receiving an input

Inp Stat - Input Status - indicates the XMR is receiving a valid input based on the currently selected input format

Inp SD - Input SD - indicates that the XMR is receiving a standard definition input

Inp HD - Input HD - indicates that the XMR is receiving a high definition input

Aud Prsnt - Audio Present - indicates the XMR is receiving valid embedded audio

TC Prsnt - Timecode Present - indicates the XMR is receiving valid timecode

CC Prsnt - Closed Caption Present - indicates the XMR is receiving valid closed caption data

Note: At present Closed Caption support is only available for 60Hz formats

Out SD - Output SD - indicates that the XMR is outputting a standard definition signal

Out HD - Output HD - indicates that the XMR is outputting a high definition signal

Operation Indicator LEDs

*Note: The yellow **COMM** and **CONF** LEDs are used for the module location function that is enabled using the 2000NET GUI. The module location function causes these LEDs to repeatedly flash concurrently three times followed by an off state of 900 ms duration.*

LED Indication Condition

Fault (red)

- Off Normal operation
- On continuously Module has detected internal fault
- Long flash One of the inputs is missing or is wrong standard
- Short flash Errors present in SDI and/or AES/EBU input

COMM (yellow)

- Off No activity on frame communication bus
- Three flash/off pattern Module Location command received from a remote control system
- Short flash Activity present on the frame communication bus


CONF (yellow)



- Off Module is in normal operating mode
- Three flash/off pattern Module Location command received from a remote control system
- On continuously Module is initializing, changing operating modes or updating firmware. (When solid on along with Fault LED on, board has failed to load data.)

PWR (green)

- Off No power to module or module's DC/DC converter failed
- On continuously Normal operation, module is powered

Status Menu



 **Status** 

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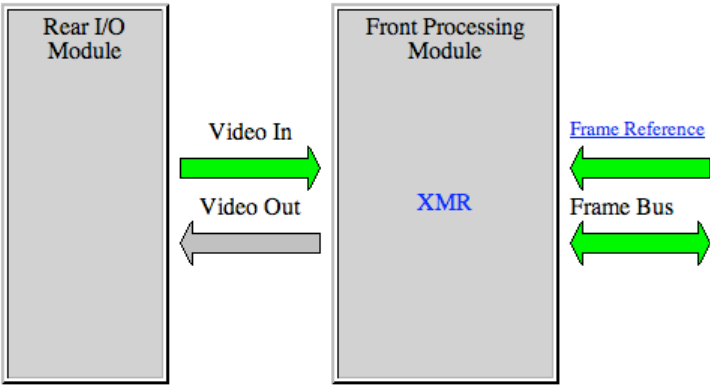
[20 Power Sled 20](#)

Model: **XMR** Description: **XMR Processing Module**

Frame Location: **not assigned** , Slot: **2**

Last Recalled E-MEM: **E-MEM 1**

Module Physical Structure



```
graph LR; RIO[Rear I/O Module] -- Video In --> FP[Front Processing Module]; FP -- Video Out --> RIO; FP -- Frame Reference --> FB[Frame Bus]; FB -- Frame Bus --> FP; subgraph FP [Front Processing Module]; XMR[XMR]; end
```

Identification

Part Number	XMR-MOD-1
Serial Number	
Hardware Version	XM2-BOOT

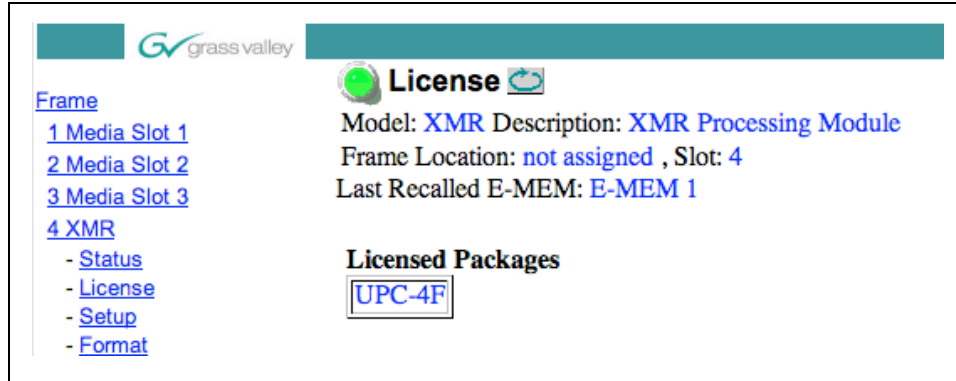
Version

Software	1.11.24.512
Firmware	8 52

The Status Menu provides feedback on the status of:

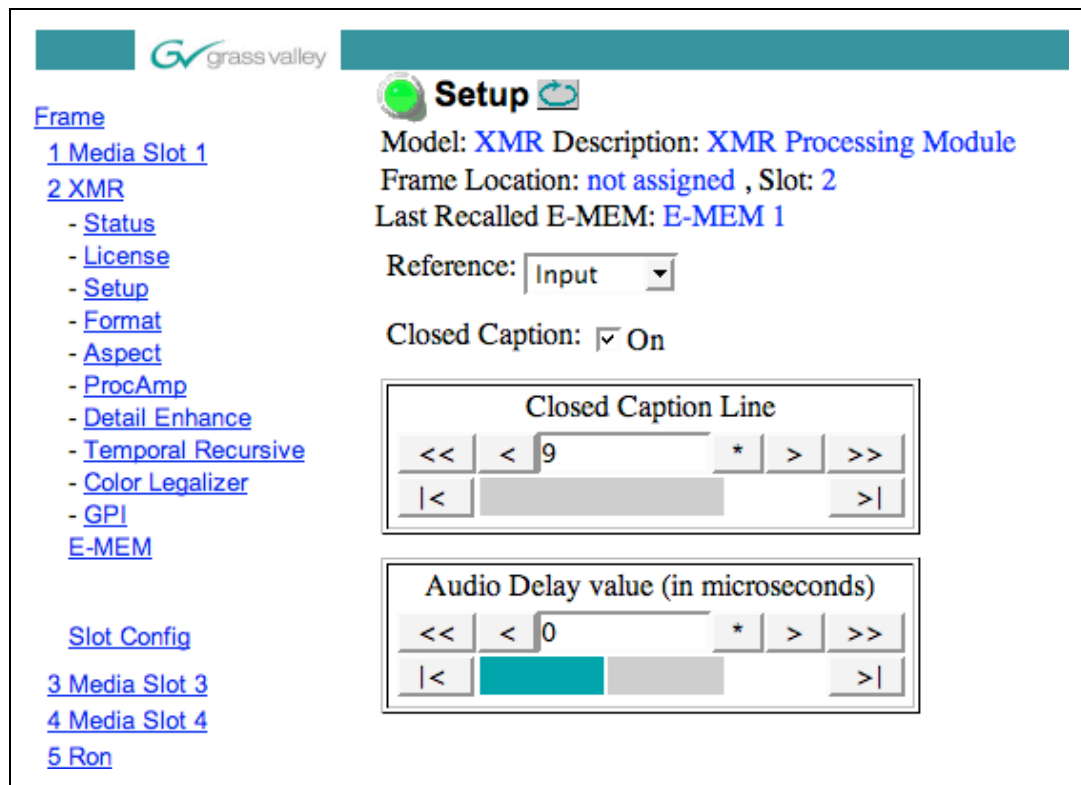
- The Input and Reference signal
- The identification of the Module including part number, serial number, and hardware version
- The version of software and firmware running on the Module

License Menu



The License menu will show the package that is currently licensed on the XMR Module. See Packages, on page 6, for a list of the packages available and their descriptions.

Setup Menu



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- [4 Media Slot 4](#)
- [5 Ron](#)

Setup

Model: **XMR** Description: **XMR Processing Module**
 Frame Location: **not assigned** , Slot: **2**
 Last Recalled E-MEM: **E-MEM 1**

Reference:

Closed Caption: ☒ On

Closed Caption Line

<< < 9 * > >>
 |< >|

Audio Delay value (in microseconds)

<< < 0 * > >>
 |< >|

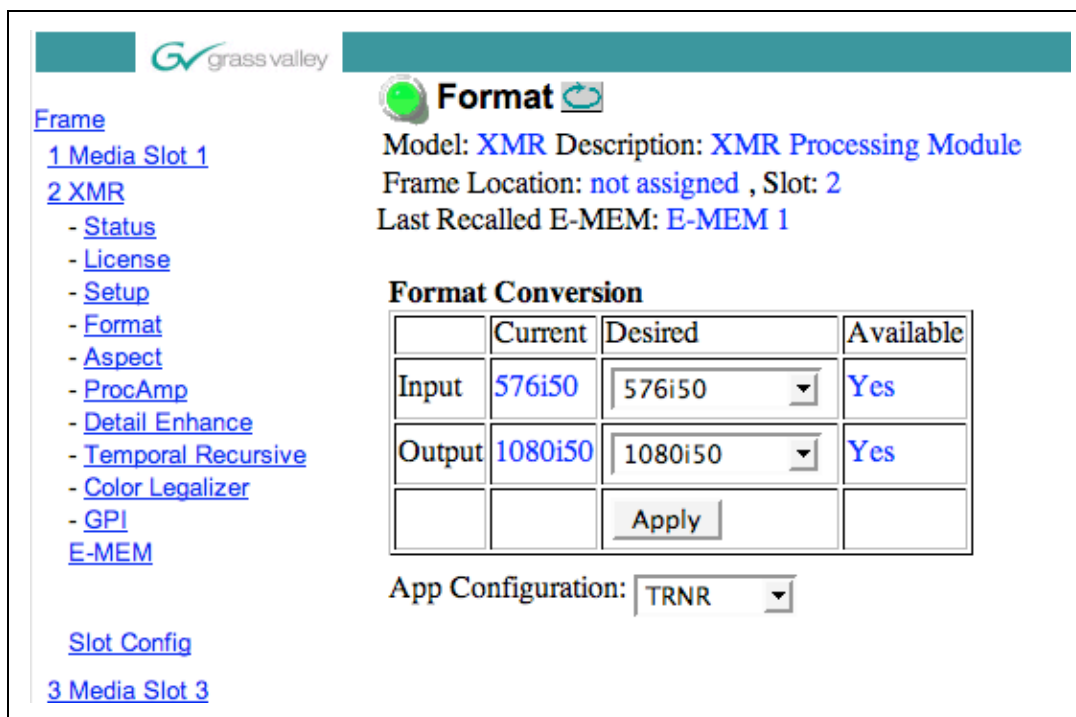
Reference - Allows the user to select whether the XMR locks to its input or to the external reference provided by the frame.

Closed Caption - Enable processing of Closed Caption data

Closed Caption Line - Allows the user to select the line on which closed caption will be output (for 480i59.94 output only).

Audio Delay - Allows the user to adjust the audio delay relative to the video processing delay.

Format Menu



The screenshot shows the 'Format' menu in the Grass Valley software. The interface includes a sidebar with navigation links, a main content area with model and location information, and a 'Format Conversion' table.

Format

Model: **XMR** Description: **XMR Processing Module**
Frame Location: **not assigned** , Slot: **2**
Last Recalled E-MEM: **E-MEM 1**

Format Conversion

	Current	Desired	Available
Input	576i50	576i50	Yes
Output	1080i50	1080i50	Yes
		Apply	

App Configuration: TRNR

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[Slot Config](#)
[3 Media Slot 3](#)

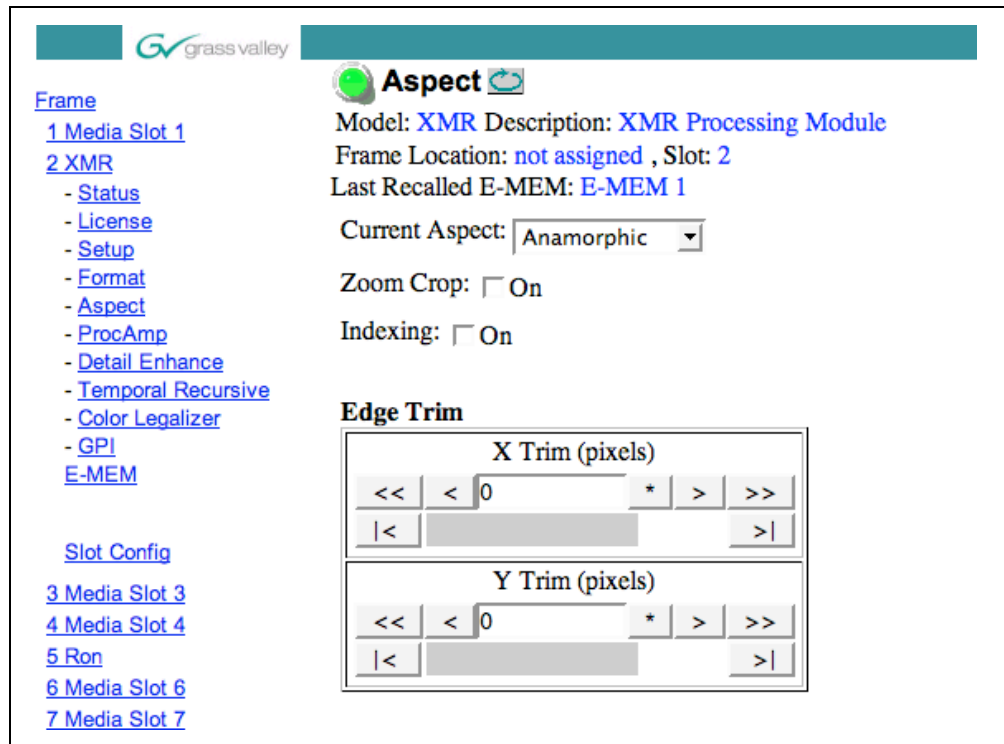
Input - Select the desired input format

Output - Select the desired output format

Apply - Press Apply to enable the selected formats

App Configuration -

Aspect Menu



Current Aspect: The **Current Aspect Menu** offers the following aspect ratio conversion options as shown in the inset above:

- **Anamorphic** - This mode is similar to common top and bottom in that it ensures that the top and bottom edges of the input aspect ratio match the top and bottom edges of the output aspect ratio. It also, however, stretches the image horizontally to fill the output 16:9 aspect ratio. This mode is designed for use with material that was originally captured with an anamorphic lens, thereby generating an output image with correct geometry when stretched horizontally to 16:9.

When used with standard 4:3 material, it will have the effect of stretching the material horizontally causing circles to appear as ovals, etc.

- **Common Top** - Ensures that the top and bottom edges of the input image match the top and bottom edges of the output aspect ratio. For example, if the input aspect ratio were 4:3 and it was passed on to a 16:9 display using the common top and bottom method, the original 4:3 image would appear centered in the 16:9 display with black bars, or pillars, on the left and right side.
- **Common Side** - Ensures that the left and right edges of the input image match the left and right edge of the output aspect ratio. For example, if the input aspect ratio is 4:3 and the output aspect ratio is 16:9, the left and right edges of the input image are stretched to match the left and right edges of the output. In order to maintain correct geometry of the image, the input image is then stretched vertically as well. This has the same result as zooming in on the image. While this method maintains correct geometry and fills the entire output display, it also results in an overall lose of approximately 33.33% of the input information in the vertical domain. This loss of information is split evenly between the top and bottom of the image.

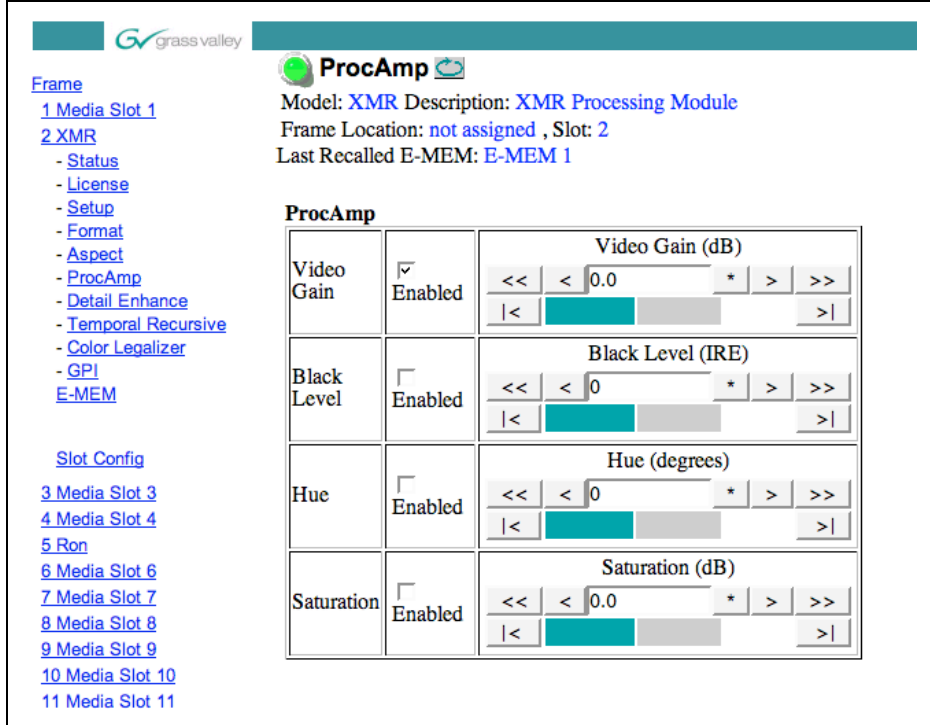
Zoom/Crop - This function, when selected, will zoom the image by 3-pixels and then crop the image by 3-pixels. This purpose of this function is to allow video disturbances that may arise on the top or bottom edge of an image or on the left or right side of an image to be corrected.

Indexing On - Enable support for RP186.

Note: This command is only available with a 576i50 input

Edge Trim - This control adjusts the amount of border cropping that is performed on the image in the horizontal (X trim) and / or vertical (Y trim) directions. It is adjustable from 0-to-500 pixels in the horizontal domain and 0-to-500 lines in the vertical domain.

Proc Amp Control Menu



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ProcAmp
 Model: **XMR** Description: **XMR Processing Module**
 Frame Location: **not assigned** , Slot: **2**
 Last Recalled E-MEM: **E-MEM 1**

ProcAmp		
Video Gain	<input checked="" type="checkbox"/> Enabled	Video Gain (dB) << < 0.0 * > >> < [Slider] >
Black Level	<input checked="" type="checkbox"/> Enabled	Black Level (IRE) << < 0 * > >> < [Slider] >
Hue	<input checked="" type="checkbox"/> Enabled	Hue (degrees) << < 0 * > >> < [Slider] >
Saturation	<input checked="" type="checkbox"/> Enabled	Saturation (dB) << < 0.0 * > >> < [Slider] >

Video Gain Enabled - Enables the Video Gain Adjustment.

Video Gain - Sets the overall amplitude of the output video signal. Once the adjustment is made, Press Apply to enable the selected adjustment. The range of the control is +6.00dB to -6.00dB.

Black Level Enabled - Enables the Black Level Adjustment.

Black Level - Adjusts the black level of the output video signal. Once the adjustment is made, Press Apply to enable the selected adjustment. The range of the control is +30 IRE to -30 IRE.

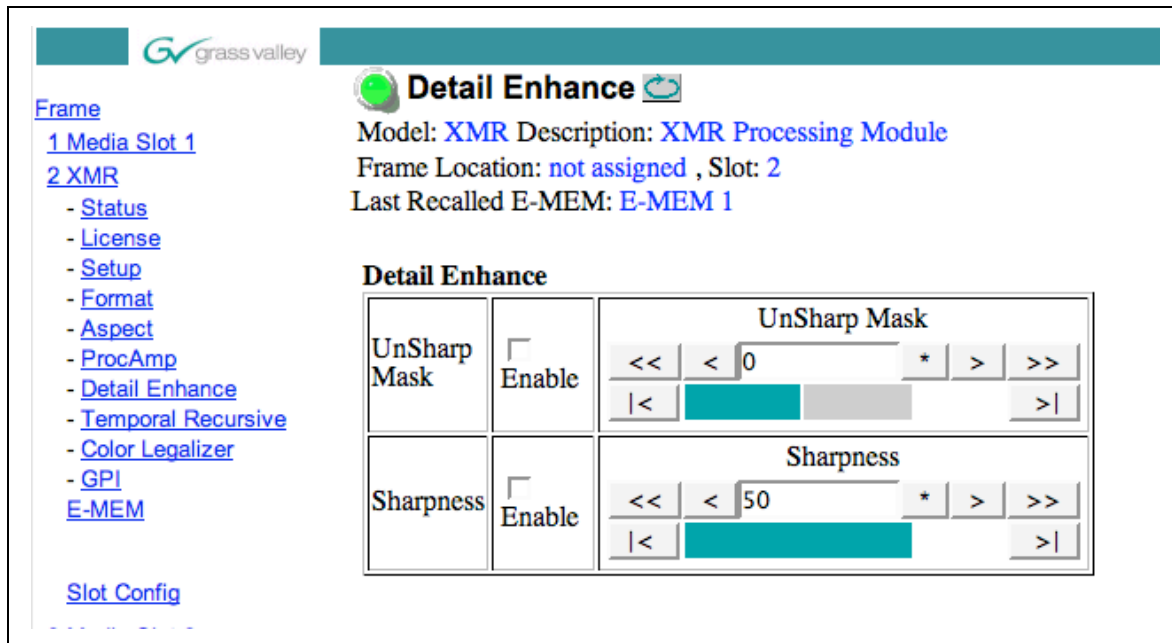
Hue Enabled - Enables the Hue Adjustment.

Hue - Adjusts the phase of the output video signal. Once the adjustment is made, Press Apply to enable the selected adjustment. The range of the control is -179.0 degrees to +178.0 degrees.

Saturation Enabled - Enables the Saturation Adjustment.

Saturation - Adjusts the Chroma Saturation of the output video signal. Once the adjustment is made, Press Apply to enable the selected adjustment. The range is +6.0 to -6.0dB.

Detail Enhance Menu



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Detail Enhance
 Model: [XMR](#) Description: [XMR Processing Module](#)
 Frame Location: [not assigned](#) , Slot: [2](#)
 Last Recalled E-MEM: [E-MEM 1](#)

Detail Enhance

UnSharp Mask	<input type="checkbox"/> Enable	UnSharp Mask << < 0 * > >> < [Slider] >
Sharpness	<input type="checkbox"/> Enable	Sharpness << < 50 * > >> < [Slider] >

Based on a traditional film compositing technique called "Unsharp Masking." This edge-sharpening filter allows for both positive and negative aperture correction.

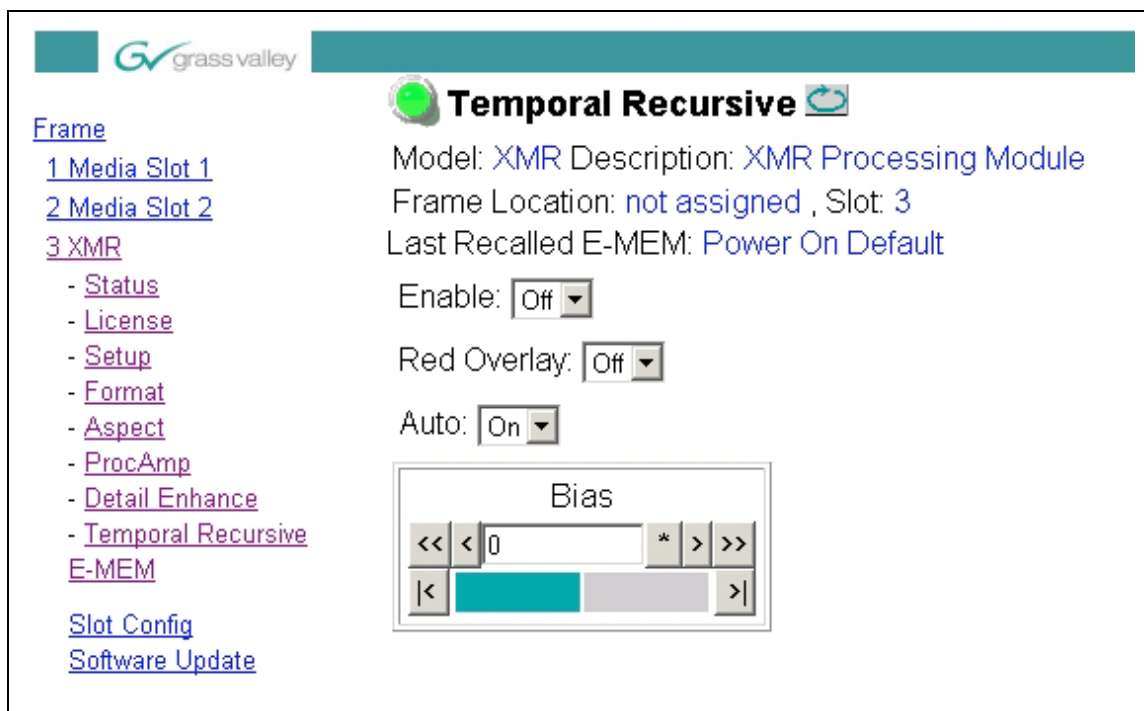
Unsharp Mask Enable - Enables the Detail Enhancement Adjustment.

Unsharp Mask Slider - Allows the user to enhance the detail in the image. The range of the control is 0 to 100

Sharpness Enable - Enables the Sharpness Adjustment.

Sharpness Slider - Allows the user to sharpen the detail in the image. The range of the control is 0 to 100

Temporal Recursive Filter



This Noise Reducer is a motion adaptive temporal recursive filter that works well in removing random and Gaussian noise. Each pixel is labeled as motion, no motion, or noise. Each of these classes of pixels is treated differently in the noise reduction process. For pixels in which there is no motion, low-level Gaussian noise may be reduced via temporal processing by a weighted averaging over successive frames. For pixels labeled as random noise, spatial processing replaces these pixels. Pixels labeled as being “in motion” are retained “as is” to avoid artifacts that may be introduced through temporal processing.

The Temporal Recursive Filter also has an “Auto” mode for providing better operation in all modes.

Enabled - Enables the Temporal Recursive Filter.

Red Overlay - When turned On, the system superimposes a red overlay onto areas in the input image where the temporal recursive filter will identify motion. The red overlay would display what the system is not ‘attacking’ or filtering.

- In the Temporal Recursive Filter, the red overlay will show the pixels in the image that have been determined to be in motion. In Auto mode, these pixels will not have any noise reduction applied to them. In manual mode they will have noise reduction applied according to the setting of the Motion, Historical Percentage slider.



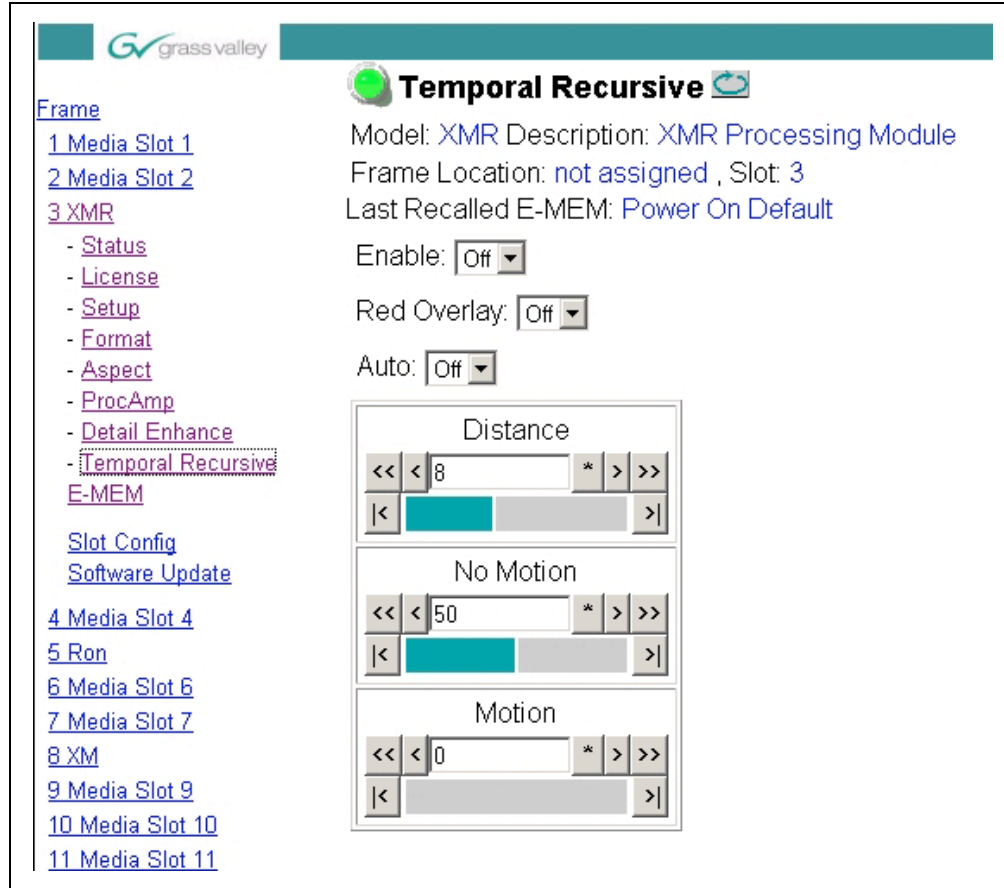
- In Auto mode the red overlay will help to identify the pixels in the image, which are being processed by the temporal recursive filter. In manual mode it can help in adjusting the Distance control. The Dist Button is used to set the *distance* threshold to determine the sensitivity to motion between the current frame and historical frames. This threshold represents a percentage of the current pixel value that the historical pixel value must be within in order to be considered “unchanged”. The Distance control should be set to a point where only pixels that are actually in motion are colored red. This will allow noise to be correctly processed as noise rather than motion.

Auto Mode

Auto- Engages a feedback controller that dynamically sets the distance, no motion and motion sliders based on noise and motion measurement extracted from the scene. Setting this button will disengage the distance, no motion and motion adjustments.

Bias (Only used in Auto Mode) - Adjusts the noise set point in the temporal recursive controller. The higher the bias, the more aggressive the controller is towards noise in the scene. The lower the bias, the more sensitive the controller is towards motion in the scene. Once the adjustment is made, Press Apply to enable the selected adjustment. The range of the bias control is -6 to +6, with a nominal setting of 0.

Manual Mode



Temporal Recursive

Model: XMR Description: XMR Processing Module
 Frame Location: not assigned , Slot: 3
 Last Recalled E-MEM: Power On Default

Enable:

Red Overlay:

Auto:

Distance

<< < 8 * > >>

|< [Slider] >|

No Motion

<< < 50 * > >>

|< [Slider] >|

Motion

<< < 0 * > >>

|< [Slider] >|

Frame

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- 2 Media Slot 2
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 - Status
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- 11 Media Slot 11

Distance - Sets the distance threshold to determine the sensitivity to motion between the current frame and historical frames. This threshold represents a percentage of the current pixel value that the historical pixel value must be within in order to be considered “unchanged”. The **Dist** button is fully operational in this mode so the user can identify the motion sensitivity of this control, and better control it’s setting. Once the adjustment is made, Press Apply to enable the selected adjustment. The range of the control is 0 to 40. The nominal value for this Dist threshold is 15.

A Dist setting of 0 will detect motion at every pixel, the impact being that no filtering will occur. A Dist setting of 40 will be less sensitive to motion, temporally filtering every pixel, which may result in blurring of any objects/areas that are in motion. In other words, if Dist is too low, it thinks everything is moving, therefore no filtering. If Dist is too high, it thinks nothing is moving, therefore filtering everything

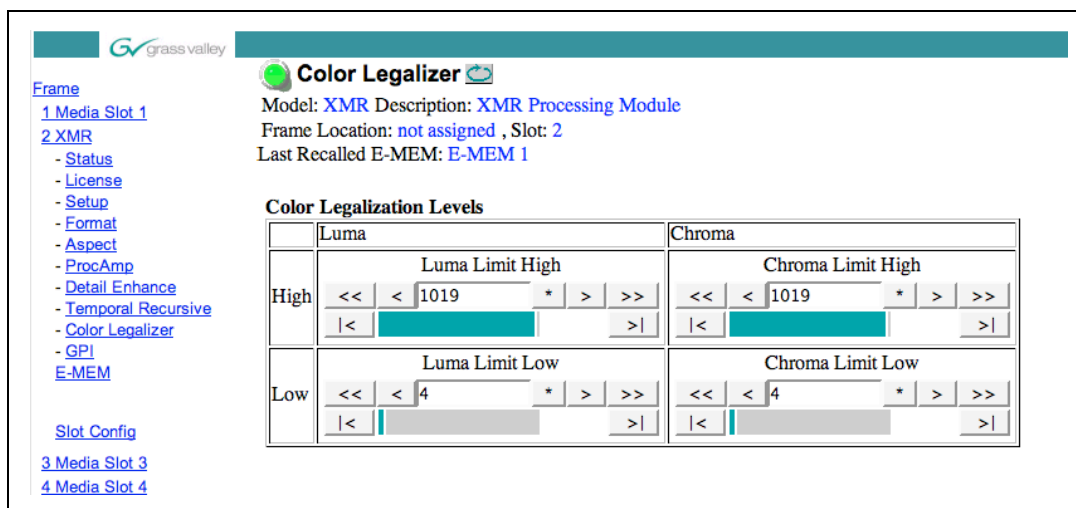
Historical Percentage: No Motion - Sets the historical weighting factor for areas in the frame where no motion has been detected. Once the adjustment is made, Press Apply to enable the selected adjustment. The range of the control is 0 to 100.

A setting of 100 forces the filter to use only historical data in areas where no motion has been detected. A setting of 0 forces the filter to use only current data in areas where no motion has been detected. The nominal setting for this is 75.

Historical Percentage: Motion - Sets the historical weighting factor for areas in the frame where motion has been detected. Once the adjustment is made, Press Apply to enable the selected adjustment. The range of the control is 0 to 100. A setting of 100 forces the filter to use only historical data in areas where motion has been detected.

A setting of 0 forces the filter to use only current data in areas where motion has been detected. The nominal setting for this slider is 0.

Color Legalizer Menu



Color Legalizer

Model: XMR Description: XMR Processing Module
 Frame Location: not assigned , Slot: 2
 Last Recalled E-MEM: E-MEM 1

Color Legalization Levels

	Luma	Chroma
High	Luma Limit High << < 1019 * > >> < [] >	Chroma Limit High << < 1019 * > >> < [] >
Low	Luma Limit Low << < 4 * > >> < [] >	Chroma Limit Low << < 4 * > >> < [] >

Slot Config

3 Media Slot 3
 4 Media Slot 4

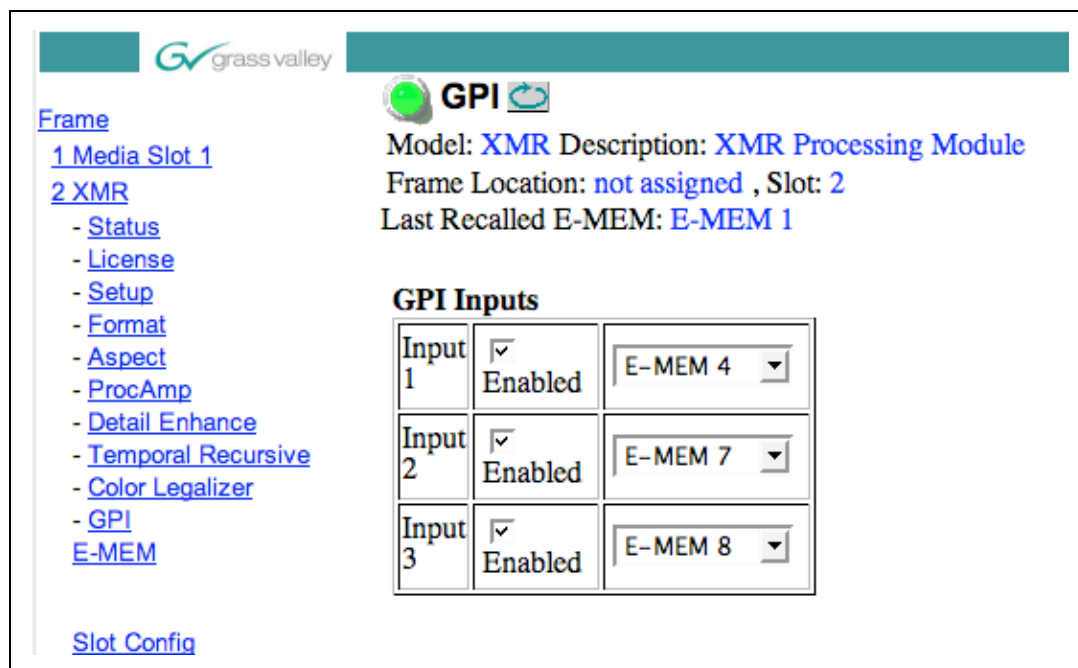
Luma Limit High - allows the users to set the upper limit for the luminance portion of the signal. The range of adjustment is

Luma Limit Low - allows the users to set the lower limit for the luminance portion of the signal. The range of adjustment is

Chroma Limit High - allows the users to set the upper limit for the chroma portion of the signal. The range of adjustment is

Chroma Limit Low - allows the users to set the lower limit for the chroma portion of the signal. The range of adjustment is

GPI Menu



GPI

Model: **XMR** Description: **XMR Processing Module**
 Frame Location: **not assigned** , Slot: **2**
 Last Recalled E-MEM: **E-MEM 1**

GPI Inputs

Input 1	<input checked="" type="checkbox"/> Enabled	E-MEM 4
Input 2	<input checked="" type="checkbox"/> Enabled	E-MEM 7
Input 3	<input checked="" type="checkbox"/> Enabled	E-MEM 8

GPI Inputs

Enabled - enables the selected GPI

E-MEM - Allows the user to assign an E-MEM to one of the 3 GPI's

Pin-out Designations for 9-pin D-Style Female GPI connector

PINS	SIGNALS	PINS	SIGNALS
1	GPI INPUT #3	5 & 6	System Ground
2	GPI INPUT #2	7	Not Connected
3	GPI INPUT #1	4, 7-9	Reserved

E-MEM Menu (Standard)

Frame

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- [E-MEM](#)

Slot Config

- [3 Media Slot 3](#)
- [4 Media Slot 4](#)
- [5 Ron](#)
- [6 Media Slot 6](#)
- [7 Media Slot 7](#)
- [8 Media Slot 8](#)
- [9 Media Slot 9](#)
- [10 Media Slot 10](#)
- [11 Media Slot 11](#)
- [12 Media Slot 12](#)
- [13 2000NET](#)
- [15 Sync Slot](#)
- [18 Power Sled 18](#)
- [19 Fan Sled 19](#)
- [20 Power Sled 20](#)

E-MEM

Model: **XMR** Description: **XMR Processing Module**
 Frame Location: **not assigned** , Slot: **2**
 Last Recalled E-MEM: **E-MEM 1**

E-MEM®

View Selection: ☒ Standard ☐ Advanced

Local Operations			
E-MEM 1:	E-MEM 1	Recall	Learn
E-MEM 2:	E-MEM 2	Recall	Learn
E-MEM 3:	E-MEM 3	Recall	Learn
E-MEM 4:	E-MEM 4	Recall	Learn
E-MEM 5:	E-MEM 5	Recall	Learn
E-MEM 6:	E-MEM 6	Recall	Learn
E-MEM 7:	E-MEM 7	Recall	Learn
E-MEM 8:	E-MEM 8	Recall	Learn
E-MEM 9:	E-MEM 9	Recall	Learn
E-MEM 10:	E-MEM 10	Recall	Learn

[Recall](#) Recall factory settings

E-MEM 1 - 10 - Saves the currently selected setting

The user may name each Preset.

Save - Saves the selected Preset

Recall - Recalls the selected Preset.

E-MEM Menu (Advanced)

Frame
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E-MEM
 Model: [XMR](#) Description: [XMR Processing Module](#)
 Frame Location: [not assigned](#) , Slot: [2](#)
 Last Recalled E-MEM: [E-MEM 1](#)

E-MEM®
 View Selection: ☐ Standard ☒ Advanced

	Local Operations		File Operations	
E-MEM 1:	<input type="text" value="E-MEM 1"/>	<input type="button" value="Recall"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/> <input data-cs="2" data-kind="parent" type="button" value="Load from..."/>
E-MEM 2:	<input type="text" value="E-MEM 2"/>	<input type="button" value="Recall"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/> <input data-cs="2" data-kind="parent" type="button" value="Load from..."/>
E-MEM 3:	<input type="text" value="E-MEM 3"/>	<input type="button" value="Recall"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/> <input data-cs="2" data-kind="parent" type="button" value="Load from..."/>
E-MEM 4:	<input type="text" value="E-MEM 4"/>	<input type="button" value="Recall"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/> <input data-cs="2" data-kind="parent" type="button" value="Load from..."/>
E-MEM 5:	<input type="text" value="E-MEM 5"/>	<input type="button" value="Recall"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/> <input data-cs="2" data-kind="parent" type="button" value="Load from..."/>
E-MEM 6:	<input type="text" value="E-MEM 6"/>	<input type="button" value="Recall"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/> <input data-cs="2" data-kind="parent" type="button" value="Load from..."/>
E-MEM 7:	<input type="text" value="E-MEM 7"/>	<input type="button" value="Recall"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/> <input data-cs="2" data-kind="parent" type="button" value="Load from..."/>
E-MEM 8:	<input type="text" value="E-MEM 8"/>	<input type="button" value="Recall"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/> <input data-cs="2" data-kind="parent" type="button" value="Load from..."/>
E-MEM 9:	<input type="text" value="E-MEM 9"/>	<input type="button" value="Recall"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/> <input data-cs="2" data-kind="parent" type="button" value="Load from..."/>
E-MEM 10:	<input type="text" value="E-MEM 10"/>	<input type="button" value="Recall"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/> <input data-cs="2" data-kind="parent" type="button" value="Load from..."/>

Recall factory settings

Local Operations

- **E-MEM 1 - 10** - Saves the currently selected setting
- The user may name each Preset.
- **Save** - Saves the selected Preset
- **Recall** - Recalls the selected Preset.

File Operations

- **SaveTo** - Allows the user to save the currently selected e-mem file to an external PC
- **Load From** - Allows the user to load an e-mem file from an external PC